

First Named Inventor: Roger L. Frick

Application No.: 10/822,425

3

**AMENDMENT TO THE DRAWINGS**

Please replace original Sheet 22/ 24 with the attached Replacement Sheet 22/24 drawing.

**REMARKS**

This Amendment is in response to the Office Action of February 16, 2007, in which claims 1, 2, 5, 6, 9, 11-18, 20-25, 27, 29-34, and 36 were rejected and claims 3, 4, 10, and 26 were objected to. With this Amendment, claims 9, 17, 18, 21, 22, 24, 27, 30-34, and 36 have been amended. Claims 2, 12, and 29 have been cancelled, and new claims 37 and 38 have been added. Claims 1, 3-6, 9-11, 13-18, 20-27, 30-34, and 36-38 are now in the application and are presented for reconsideration and allowance.

In the Office Action, the title was objected to as not being descriptive. With this Amendment, the title has been amended to "ELECTROMAGNETIC RESONANT SENSOR WITH DIELECTRIC BODY AND VARIABLE GAP CAVITY". This title is indicative of the invention as defined in the pending claims, and overcomes the objection to the original title.

Claims 2 and 12 were objected to as being of improper dependent form because they did not further limit the subject matter of a previous claim. With this Amendment, claims 2 and 12 have been cancelled.

Claims 18 and 29-34 were objected to as being in improper dependent form for depending on a cancelled claim. Claim 18 has been amended to depend on claim 17, rather than cancelled claim 35. Dependent claim 29 has been cancelled in light of the amendment to independent claim 27, and dependent claims 30-34 have been amended to depend from independent claim 27. The objection with respect to claims 29-34, therefore, has been overcome.

Claims 17, 20 and 29-34 were rejected under 35 U.S.C. § 112, second paragraph as being indefinite. Claim 17 has been amended to provide the antecedent basis for "the variable cavity gap". The amendment to claim 17 corrects a typographical error that resulted in the lack of antecedent basis. With the amendment to claim 17, the rejection of both independent claim 17 and dependent claim 20 has been resolved.

With respect to the rejection of claim 29, the cancellation of claim 29 and the amendment to independent claim 27 resolves the issue of location of the conductor, and renders the rejection under 35 U.S.C. § 112 moot. Amended claim 27 now includes an electrically conductive

layer on at least one interior wall of the dielectric body defining the cavity. Thus the location of the electrically conductive layer is recited in claim 27.

Claims 30-34 have each been amended to depend from independent claim 27, and have been amended to clarify that it is the shape of the electrically conductive layer that causes the sensor to resonate in a particular way. With these amendments, the rejection under 35 U.S.C. § 112 with respect to claims 30-34 has been overcome.

Claims 9, 11-13, 15, 16, 18, 22, 24, 25, 27, 29, and 36 were rejected under 35 U.S.C. § 102(e) as being anticipated by Thomson et al. (U.S. Pub. No. 2005/0241403).

First, with respect to dependent claim 18, the amendment of claim 18 to depend from claim 17 rather than cancelled claim 35 overcomes the rejection under 35 U.S.C. § 102(e). Claim 17, from which claim 18 now depends, was rejected only under 35 U.S.C. § 112, second paragraph based upon lack of antecedent basis. As discussed above, the amendment to claim 17 has overcome the rejection, and claim 18 is allowable for the same reasons as claim 17. The rejection of claim 18 under 35 U.S.C. § 102(e) based upon Thomson should be withdrawn in view of the amendment to claim 18.

Each of independent claims 9, 22, 24, 27, and 36, which were rejected under 35 U.S.C. § 102(e) based upon Thomson has been amended to include as part of the resonator an electrically conductive layer on at least one interior wall of the dielectric body defining the variable cavity gap or the cavity within the dielectric body. As amended, each of these claims define an invention which is neither taught nor suggested by Thomson. Except for a brief reference to a dielectric resonator found in paragraph 0106, Thomson describes a metallic resonator. In the discussion in paragraph 0106, Thomson does not suggest the use of an electrical conductor on an interior wall of the dielectric body that defines the cavity or variable gap.

In rejecting claim 29 (which is now cancelled) that recited “a conductor on one of the interior surfaces”, the Office Action relied on paragraph 0059 of Thomson. That paragraph reads:

As mentioned previously, the coupler 22 transfers or injects the interrogation signal 24 into the electromagnetic cavity 20 and the coupler 22 also transfers or radiates the response signal 26 to the interrogator 16. Energy can be inserted or removed from an

electromagnetic cavity 20 by the same methods that are used to couple energy into and out of waveguides. The operating principles of probes (electric coupling), loops (magnetic coupling), and slots are the same whether used in an electromagnetic cavity or a waveguide as is commonly known in the art. Therefore, any one of these three methods may be used to transfer energy into or out of the electromagnetic cavity 20. If a slot were used for the coupler 22, the degree of coupling would be determined by the size, shape and position of the slot.

There is no suggestion in paragraph 0059 of an electrically conductive layer on an interior wall of a dielectric body. Paragraph 0059 is describing ways of coupling energy into an out of the resonator, not electrically conductive layers that define, along with the dielectric body and the variable gap, the nature of the resonance that occurs within the sensor.

With the amendments to independent claims 9, 22, 24, 27, and 36, those independent claims, as well as dependent claims that depend from them are now in condition for allowance. The rejection under 35 U.S.C. § 102(e) based upon Thomson has been overcome and should be withdrawn.

Claim 14 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Thomson. Claim 14 depends from independent claim 9, which has been amended as discussed above. With the amendment to claim 9, dependent claim 14 is also in condition for allowance. Neither claim 9 nor claim 14 is taught or suggested by Thomson.

Independent claim 21 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Thomson et al. in view of Billeter (U.S. Patent No. 3,909,713). Independent claim 21 has been amended in a manner similar to independent claims 9, 22, 24, 27, and 36. Resonator defined in independent claim 21 now includes an electrically conductive layer on at least one interior wall of the dielectric body defining the cavity. In addition, claim 21 states that the dielectric body, the electrically conductive layer and the cavity are configured to resonate at suboptical frequencies as a function of the measurable parameter.

Claim 21, as amended, is neither taught nor suggest by Thomson, by Billeter or any combination of those two references. The rejection of claim 21 under 35 U.S.C. § 103(a) should be withdrawn.

Claims 1, 2, 5, 6, 22, and 23 were rejected under the judicially created doctrine of obviousness-type double patenting over U.S. Patent No. 6,901,101. With this Amendment, a Terminal Disclaimer has been submitted. The rejection of claims 1, 2, 5, 6, 22, and 23 has been overcome and should be withdrawn.

In the Office Action, claims 3, 4, 10, and 26 were objected to as being dependent upon rejected based claims. As a result of the Terminal Disclaimer that has been filed, the rejection of claim 1, upon which claims 3 and 4 depend, has been overcome. As a result, claims 3 and 4 are now in condition for allowance. Claim 10 depends from amended claim 9 and claim 26 depends from amended claim 24. As a result of the amendments to independent claims 9 and 24, the objection to claims 10 and 26 has been overcome.

In addition, new claims 37 and 38 have been added. Claim 37 corresponds to claim 10 rewritten in independent form, and claim 38 corresponds to claim 26 rewritten in independent form. Since claim 10 and claim 26 were indicated as being allowable if rewritten, claims 37 and 38 should be allowed.

Finally, an amendment to drawings has been made with a substitute sheet 22/24 being submitted. The reason for the drawing corrections is to make FIGS. 36B and 37B consistent with FIGS. 36A and 37A, respectively.

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Application No.: 10/822,425

15

In conclusion, claims 1, 3-6, 9-11, 13-18, 20-27, 30-34, and 36-38 are now in condition for allowance. Notice to that effect is requested.

Respectfully submitted,

KINNEY & LANGE, P.A.

Date:

5/11/07

By:



David R. Fairbairn, Reg. No. 26,047

THE KINNEY & LANGE BUILDING

312 South Third Street

Minneapolis, MN 55415-1002

Telephone: (612) 339-1863

Fax: (612) 339-6580

DRF:ks